

SECTION 15100 - VALVES, GENERAL

City of San Diego, CWP Guidelines

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing general requirements for valves including epoxy coating, installing, adjusting, and testing of valves and where buried valves are indicated, valve boxes to grade, with covers, stem extensions, and position indicators.

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NTS: The WORK of this Section applies to the WORK of the following Sections:

1. Section 15103 Globe Valves
2. Section 15104 Butterfly Valves
3. Section 15105 Check Valves
4. Section 15106 Ball Valves
5. Section 15107 Diaphragm Valves
6. Section 15109 Gate Valves
7. Section 15110 Plug Valves
8. Section 15111 Three-Way Plug Valves
9. Section 15112 Solenoid Valves
10. Section 15113 Air Release and Vacuum Valves
11. Section 15114 Pressure Regulating Valves
12. Section 15115 Miscellaneous Valves
13. Section 15116 Telescoping Valves

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1.2 RELATED SECTIONS

- A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section 11000 Equipment General Provisions
2. Section 15000 Piping Components
3. Section 15101 Valve Operators

1.3 SPECIFICATIONS AND STANDARDS

- A. Except as otherwise indicated, the current editions of the following standards apply to the WORK of this Section:

1. ANSI B16.1 Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800
2. ANSI B16.5 Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys
3. ANSI/ASME B1.20.1 General Purpose Pipe Threads (Inch)

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| 4. | ANSI/ASME B31.1 | Power Piping |
| 5. | ASTM A 36 | Specification for Structural Steel |
| 6. | ASTM A 48 | Specification for Gray Iron Castings |
| 7. | ASTM A 126 | Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings |
| 8. | ASTM A 536 | Specification for Ductile Iron Castings |
| 9. | ASTM B 61 | Specification for Steam or Valve Bronze Castings |
| 10. | ASTM B 62 | Specification for Composition Bronze or Ounce Metal Castings |
| 11. | ASTM B 148 | Specification for Aluminum-Bronze Castings |
| 12. | ASTM B 584 | Specification for Copper Alloy Sand Castings for General Applications |
| 13. | ANSI/AWWA C500 | Gate Valves for Water and Sewerage Systems |
| 14. | ANSI/AWWA C502 | Dry-Barrel Fire Hydrants |
| 15. | ANSI/AWWA C503 | Wet-Barrel Fire Hydrants |
| 16. | ANSI/AWWA C504 | Rubber-Seated Butterfly Valves |
| 17. | ANSI/AWWA C506 | Backflow Prevention Devices - Reduced Pressure Principle and Double Check Valve Types |
| 18. | ANSI/AWWA C507 | Ball Valves 6 Inches Through 48 Inches |
| 19. | AWWA C508 | Swing-Check Valves for Waterworks Service, 2 Inches Through 24 Inches NPS |
| 20. | ANSI/AWWA C509 | Resilient-Seated Gate Valves for Water and Sewage Systems |
| 21. | AWWA C550 | Protective Interior Coatings for Valves and Hydrants |
| 22. | SSPC-SP-2 | Hand Tool Cleaning |
| 23. | SSPC-SP-5 | White Metal Blast Cleaning |

1.4 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted in compliance with Section 01300:

1. Manufacturer's product data including catalogue cuts.
2. Manufacturer's installation instructions.
3. Shop drawings showing details and dimensions.
4. Manufacturer's certification that products comply with the indicated requirements.
5. Schedule of valves indicating valve identification and location.
6. Manufacturer's certification that epoxy coatings have been factory tested and comply with the indicated requirements.

1.5 OWNER'S MANUAL

- A. The following shall be included in the OWNER'S MANUAL in compliance with Section 01300:
1. Manufacturer's installation and operating instructions.
 2. Manufacturer's maintenance procedures.
 3. List of special tools.
 4. Schedule of valves indicating valve identification and location.

1.6 FACTORY TESTING

- A. **General:** Valves shall be tested in compliance with the AWWA Standards as indicated. Except as otherwise indicated, each valve body shall be tested under a test pressure equal to twice its design water-working pressure.
- B. **Proof-of-Design Tests:** The CONTRACTOR shall furnish the CONSTRUCTION MANAGER three (3) certified copies of a report from an independent testing laboratory certifying successful completion of proof-of-design testing for all valves of sizes 10-inch and larger unless indicated otherwise in the specific valve Section. In lieu of testing the valves at an independent testing laboratory, proof-of-design testing may be performed at the valve manufacturer's laboratory, but must be witnessed by a representative of a qualified independent testing laboratory representative. Proof-of-design testing shall have been performed on not less than three valves, with all three units demonstrating full compliance with the test standards. Failure to satisfactorily complete the test shall be deemed sufficient evidence to reject all valves of the proposed make or manufacturer's model number.

1.7 FIELD TESTING

- A. **Testing:** Valves shall be field-tested for compliance with the indicated requirements.

PART 2 -- PRODUCTS

2.1 VALVES

- A. **General:** Shut-off valves, 6-inch and larger, shall have operators with position indicators. Where buried, these valves shall be provided with valve boxes and covers containing position indicators, and valve extensions. Valves mounted higher than 7 feet above working level shall be provided with chain operators.
- B. **Valve Flanges:** The flanges of valves shall comply with Section 15000.
- C. **Gate Valve Stems:** Where dezincification is indicated, gate valve stems shall be fabricated with bronze conforming to ASTM B 62, containing not more than 5 percent of zinc nor more than 2 percent of aluminum. Gate valve stems shall be designed for minimum tensile strength of 60,000 psi, a minimum yield strength of 40,000 psi, and an elongation of at least 10 percent in 2 inches, as determined by a test coupon poured from the same ladle from which the valve stems are poured. Where dezincification is not indicated, bronze conforming to ASTM B 584 may be used.
- D. **Protective Coating:** Except where otherwise indicated, ferrous surfaces, exclusive of stainless steel surfaces, in the water passages of all valves 4-inch and larger, and exterior surfaces of submerged valves, shall be epoxy coated conforming to Section 09800. Flange faces of valves shall not be epoxy coated.

- E. **Valve Operators:** Where indicated, valves shall include electric operators recommended by the manufacturer. Operators of the same type shall be furnished by the same manufacturer. Valve operators, regardless of type, shall be installed, adjusted, and tested by the valve manufacturer at the manufacturing plant. Except as otherwise indicated, electric, pneumatic, and hydraulic valve operators shall comply with Section 15101.
- F. **Nuts and Bolts:** Nuts and bolts on valve flanges, bodies and supports shall comply with Section 05500.

2.2 NAMEPLATES, TOOLS AND SPARE PARTS

- A. **Nameplates:** Except as otherwise indicated, a label shall be provided on all valves exclusive of hose bibbs and chlorine cylinder valves. The label shall be 1/16-inch plastic or stainless steel, minimum 2 inches by 4 inches in size, and shall be permanently attached to the valve.
- B. **Spare Parts:** Two sets of packings, O-rings, gaskets, discs, seats, and bushings shall be furnished with each valve, as applicable.

PART 3 -- EXECUTION

3.1 VALVE INSTALLATION

- A. **General:** Valves, operating units, stem extensions, valve boxes, and accessories shall be installed in accordance with the manufacturer's installation instructions. Valves shall be independently supported to prevent stresses on the pipe.
- B. **Access:** Valves shall be installed to provide easy access for operation, removal, and maintenance and to prevent interferences between valve operators and structural members or handrails.
- C. **Valve Accessories:** Where combinations of valves, sensors, switches, and controls are indicated, the combinations shall be properly assembled and installed to ensure that systems are compatible and operating properly.

** END OF SECTION **